

**[INDEX WORD]**

Digital television, AV broadcasting, Data broadcasting

**[SPECIFICATION]****[BRIEF DESCRIPTION OF THE DRAWINGS]**

FIG. 1 is an exemplary view illustrating screen configurations of digital data broadcasting on which a data broadcasting screen and an AV broadcasting screen are simultaneously displayed using one display in a related art digital television system.

FIG. 2 is a view of a system in which a digital television is connected to another displays through a home network according to an embodiment of the present invention.

FIG. 3 is a view illustrating a process for displaying digital data broadcasting in a digital television system according to the present invention.

FIG. 4 is a flow chart illustrating a process for displaying digital data broadcasting in a digital television system according to the present invention.

**<DESCRIPTION OF THE SYMBOLS IN MAIN PORTIONS OF THE DRAWINGS>**

100: Set-top box

110: Digital television

120: PDA

130: Portable terminal

140: Home network

150: Remote controller

160: Monitor

**[DETAILED DESCRIPTION OF THE PRESENT INVENTION]****[OBJECT OF THE PRESENT INVENTION]****[FIELD OF THE INVENTION AND DESCRIPTION OF THE RELATED ART]**

The present invention relates to a method for displaying digital data broadcasting using a plurality of displays in a digital television system.

Generally, television broadcasting transmitted using a digital signal is collectively referred to as a digital television. The United States determines to employ a digital system in a next generation television called an advanced television (ATV). In Europe,

many projects such as HD DIVINE of Sweden broadcasting, SPECTRE of England and DIAMOND of France broadcasting are in progress. The digital television is a next generation television system interfacing with B-ISDN or computer networks. Also, researches with respect to the digital television are being actively progressed in all countries of the world.

Recently, digitization of the television broadcasting is being quickly progressed.

A stream transmitted in the digital broadcasting can transmit data information together with image/voice data. Examples of the data information transmitted together with the image/voice data include data information based on markup such as hypertext markup language (HTML) of advanced television enhancement forum (ATVEF) and eXtensible DTV Markup Language (XDML) of digital TV application software environment (DASE) and data information based on Java such as Xlet of DASE.

The digital broadcasting can broadcast various types of data in addition to image or voice data broadcasted in a related art analog television.

That is, the present digital broadcasting includes additional data broadcasting in addition to AV broadcasting. In order to display the data broadcasting, the digital television displays an AV broadcasting screen in a manner of picture in picture (PIP), picture out of picture (POP), dual display, etc.

FIG. 1 is an exemplary view illustrating screen configurations of digital data broadcasting on which a data broadcasting screen and an AV broadcasting screen are simultaneously displayed using one display in a related art digital television system.

FIG. 1A is a view illustrating a screen configuration of a digital data broadcasting on which a data broadcasting screen and an AV broadcasting screen are displayed on one screen using a PIP manner.

The AV broadcasting screen is displayed in a right upper portion on a main screen (data broadcasting screen).

FIG. 1B is a view illustrating a screen configuration of a digital data broadcasting on which a data broadcasting screen and an AV broadcasting screen are displayed on

one screen using a POP manner.

The main screen (AV broadcasting screen 1) is displayed in a left side area, and an AV broadcasting screen 2, an AV broadcasting screen 3, and an AV broadcasting screen 4 which have different channels from each other are displayed on three small windows in a right side area.

FIG. 1C is a view illustrating a screen configuration of a digital data broadcasting on which an AV broadcasting screen and a setting menu of a digital television are displayed on one screen using a dual display manner.

The AV broadcasting screen watching right now is displayed in a left side area on a dual split screen, and the setting menu screen capable of being manipulated by a user is displayed in a right side area.

FIGs. 1A to 1C are views illustrating the screen configurations of the digital data broadcasting, and the screen configurations can be varied in various forms.

However, in the screen configurations of the related art digital data broadcasting, all the data broadcasting screen, the AV broadcasting screen, and the setting menu screen should be displayed on one screen. Thus, an effective utilization of AV broadcasting and data broadcasting is limited.

In addition, when the AV broadcasting and the data broadcasting are displayed on the one screen using one display, the AV broadcasting screen is very small. Accordingly, it is difficult to understand the contents of programs during the watching television, or problems of decipher visibility occur because the user watches the AV broadcasting from a far distance.

Also, when several persons intend to watch the digital data television broadcasting using one display, it may have a limitation in case where broadcasting wanted by each of persons are different or their requirement are different.

For example, let's assume that the user watches the digital data broadcasting together with parents using the digital television.

In case where father wants to watch a new channel of the AV broadcasting, and

mother wants to watch a shopping channel of the data broadcasting, both the new channel of the AV broadcasting and the shopping channel of the data broadcasting should be displayed on the one screen. In this case, the related art digital television is insufficient to meet the two audience's demands.

In addition, if one person intends to manipulate the setting menu on the digital television during watching the AV broadcasting, the other person watching the AV broadcasting may feel inconvenience in watching the AV broadcasting because the other person may get distracted by displaying the setting menu screen together on the one screen.

In addition, in case where both the AV broadcasting and the data broadcasting are displayed on one screen using a large-scaled digital television to explain the displayed contents to many persons in a seminar, a meeting, or a presentation, it is difficult to understand speaker's explanation contents because a person who is seated a far distance couldn't see the screen well.

#### **[TECHNICAL OBJECT OF THE INVENTION]**

It is therefore an object of the present invention to provide a method for displaying digital data broadcasting in a digital television system in which a plurality of displays can be connected through a digital set-top box and home networks with respect to various broadcasting screens such as AV broadcasting screen, data broadcasting screen, a setting menu screen, an internet screen during the watching of digital data broadcasting.

#### **[CONSTITUTION AND OPERATION OF THE INVENTION]**

To achieve the above objects and other advantages, method for displaying digital data broadcasting in a digital television system comprises: selecting a broadcasting screen to be displayed on each of displays by a user when a plurality of displays is connected and used in digital data broadcasting; selectively mixing the broadcasting

screen selected by the user in a set-top box; and displaying the broadcasting screen selectively mixed in the set-top box on the plurality of displays.

The digital data broadcasting screen may include an AV broadcasting screen, a data broadcasting screen, an OSD setting menu screen, and an Internet screen.

The plurality of displays may include a monitor, a PDA, a portable terminal, and a touch screen.

Each of the plurality of the displays may include a controller for each unit.

The controller may include a remote controller, a keyboard, a mouse, a keypad, and a touch pad.

In recent years, a home network has been gradually realized. The home network can connect a digital television to home appliances such as a refrigerator, a video, and an audio through a network to unitively control communication media and security media as well as the home appliances together with the digital television.

That is, the home network is to literally realize information sharing and home automation through the network within a home.

The home network spotlighted in recent years denotes not that a LAN is just installed in the home, but rather that the home appliances such as the audio, the video, and the refrigerator are organically connected to a personal computer through a wired or wireless next generation interface such as IEEE1394, home RF, and Bluetooth.

The present invention relates to a method for displaying digital data broadcasting in a digital television system in which the digital data broadcasting that selectively outputs the digital data broadcasting to each of displays by wiredly or wirelessly connecting a plurality of displays through the home network.

Hereinafter, the present invention will be described with reference to accompanying drawings.

FIG. 2 is a view of a system in which a digital television is connected to another displays through a home network according to an embodiment of the present invention.

Currently, a built-in digital television and a digital ready television coexist in a

digital television capable of receiving digital data broadcasting. In the built-in digital television includes a built-in set-top box that is a device for receiving digital broadcasting. In the digital ready television, the set-top box is disposed on the outside thereof to separate the set-top box from a display.

FIG. 2 illustrates the digital ready television as an example. A digital television 110 is connected to a set-top box 100 to connect a monitor 160, a PDA 120, and a portable terminal 130 from one another.

An AV broadcasting screen is displayed on a screen of a digital television display by a user, and a data broadcasting screen is displayed on a screen of a personal terminal such as the PDA 120 and the portable terminal 130.

An external display such as a touch screen in addition to the personal terminal such as the PDA 120 and the portable terminal 130 may be connected to watch the data broadcasting.

Also, the digital television can be manipulated using a remoter controller, and the rest displays can be manipulated using each of input devices, e.g., a mouse, a keypad, a touch pad, etc..

As described above, the user watches the AV broadcasting through the digital television display that is a large-scaled display and watches the data broadcasting through the personal terminal. Thus, many persons can watch the data broadcasting at the same time.

FIG. 3 is a view illustrating a process for displaying digital data broadcasting in a digital television system according to the present invention.

An AV broadcasting screen, a data broadcasting screen, an OSD setting menu screen, or Internet screen is selectively mixed to display the mixed broadcasting screen on a plurality of displays.

For example, the AV broadcasting screen is displayed on a display 1, the data broadcasting screen is displayed on a display 2, and the Internet screen is displayed on a display 3.

Here, the display 1 may include a digital television, a personal input device, a personal terminal, a monitor, and a touch screen.

FIG. 4 is a flow chart illustrating a process for displaying digital data broadcasting in a digital television system according to the present invention.

In operation S100, several users, for example, select a data broadcasting screen or an Internet screen except AV broadcasting screen that is being watched using a large-scaled display by manipulating another external displays connected to a home network in digital data broadcasting such as AV broadcasting, data broadcasting, OSD setting menu, or Internet.

In operation S110, when the several users select a screen to be displayed on the displays, the selected screens are mixed to display corresponding screens on each of the connected displays.

In operation S120, the screens of the digital data broadcasting such as the AV broadcasting, the data broadcasting, the OSD setting menu, or the Internet, which are selected and mixed by the user, are displayed on each of the displays.

Each of the displays may include a monitor, a PDA, a portable terminal, or a touch screen, and may be separately manipulated using a keypad or a touch pad.

That is, the user can separately control the volume or the other broadcasting, e.g., the AV broadcasting, the data broadcasting, the setting menu, or the Internet through the display on which the user watches the broadcasting now.

The present invention relates to a method for displaying digital data broadcasting in which a plurality of displays can be connected to watch another broadcasting on each of displays, and it will be understood by those of ordinary skill in the art that various changes in form without departing from the spirit and scope of the present invention as well as the embodiments.

#### **[EFFECT OF THE INVENTION]**

As described above, the present invention provides improved convenience to the

user because the plurality of displays can be connected to the home network to watch the digital data broadcasting on each of the displays, thereby selecting required screens such as the AV broadcasting screen, the data broadcasting screen, the OSD setting menu screen, and the Internet screen according to the user's taste without regard to another displays.

In addition, the present invention can prevent users attention from being reduced because a person who is seated a far distance couldn't see the screen well in case where two or more broadcasting such as the AV broadcasting and the data broadcasting are displayed on one display, and can watch the displayed contents through the personal terminal in the seminar, the meeting, or the presentation, thereby improving the users attention and understanding.